



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,619	04/30/2001	Ladislav R. Pust	S01.12-0721	2604

7590 04/04/2003

Westman Champlin & Kelly
900 Second Avenue South
Suite 1600 International Centre
Minneapolis, MN 55402-3319

EXAMINER

MILLER, BRIAN E

ART UNIT	PAPER NUMBER
----------	--------------

2652

DATE MAILED: 04/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,619

Applicant(s)

PUST ET AL.

Examiner

Brian E. Miller

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2652

Claims 1-19 are pending.

Drawings

1. Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the separate "bonding film between the second restraint layer and the third layer", as recited in claim 7, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Koshikawa et al (US 5,898,542). Koshikawa et al discloses a MR head for a magnetic disk drive (see FIG. 8), the head (referring to FIG. 5) including: a substrate 1 made of a material (AlTiC) with a thermal

Art Unit: 2652

expansion rate CTE1 (7.9); a transducer (at least including elements 7-9) bonded to the substrate (through insulate layer 4) composed of materials, e.g., Cu, NiFe, with a thermal expansion rate CTE2 (Cu-16.5, NiFe-12.2) that is greater than CTE1 (7.9); a first restraint layer 5 that has a bond to a side of the transducer and is formed of a material (SiO_2) having a thermal expansion rate CTE3 (1.0) that is less than CTE1 (7.9). See also col. 1, lines 35-51 for the description of the head, and col. 2, lines 51-57 for the use of materials. With the above construction, it is considered that combination of the restraint layer(s) and transducer bonded together to have a combined expansion rate that is substantially matched with CTE1 (re claims 2, 5); wherein the first restraint layer has dimensions and material properties that are selected to limit protrusion of the transducer beyond the substrate over an operating temperature range (see col. 5, lines 13-21) (re claim 3); a second restraint layer 4 that has a bond to a second one of the sides of the transducer, and that is formed of a material (SiO_2) has a thermal expansion rate CTE4 (1.0) that is less than CTE1 (7.9) (re claim 4); a third layer 9 that has a bond to the second restraint layer (re claim 6); wherein a bonding film 7 is between the second restraint layer 4 and the third layer 9 (re claim 7); wherein the first constraint layer has a width that is substantially the width of the transducer and substrate (see FIG. 6(b)) (re claims 8-9); substrate has a CTE between 7-8.3, i.e., 7.9 (re claim 10); the transducer comprises metals with thermal expansion rates in the range of 12 to 17 (NiFe-12.2) (re claim 11); the first constraint layer comprises material with a thermal expansion rate of about 1.0-4.3 (SiO_2 -1.0) (re claim 12).

With respect to claims 13-17, the above structure is considered to encompass the method steps as claimed. Claim 18 is considered to also be encompassed by the above structure since the first restraint layer 4 is a thin film and deposited on another thin film, i.e., 8 (NiFe).

Art Unit: 2652

3. Claims 1-11, 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Okai et al (US 5,687,045). Okai et al discloses a MR head for a magnetic disk drive (see FIG. 16), the head (referring to FIGs. 1-2) including: a substrate 11 made of a material (AlTiC) with a thermal expansion rate CTE1 (7.9); a transducer (at least including elements 13-15) bonded to the substrate (through insulate layer 12) composed of materials, e.g., Cu, NiFe, with a thermal expansion rate CTE2 (Cu-16.5, NiFe-12.2) that is greater than CTE1 (7.9); a first restraint layer 17 that has a bond to a side of the transducer and is formed of a material ($\text{Al}_2\text{O}_3\text{-SiO}_2$) having a thermal expansion rate CTE3 (taking a 60% weight of Al_2O_3 at a CTE of 7.8 and 40% weight of SiO_2 with a CTE of 1.0 the overall CTE would be about 5.0) that is less than CTE1 (7.9). See also col. 13, line 19 to col. 14, line 15 for the description of the head. With the above construction, it is considered that combination of the restraint layer(s) and transducer bonded together to have a combined expansion rate that is substantially matched with CTE1 (re claims 2, 5); wherein the first restraint layer has dimensions and material properties that are selected to limit protrusion of the transducer beyond the substrate over an operating temperature range (see col. 14, lines 2-7) (re claim 3); a second restraint layer 12 that has a bond to a second one of the sides of the transducer, and that is formed of a material ($\text{Al}_2\text{O}_3\text{-SiO}_2$) has a thermal expansion rate CTE4 (same as CTE3 as discussed above) that is less than CTE1 (7.9) (re claim 4); a third layer 14 that has a bond to the second restraint layer (re claim 6); wherein a bonding film 13 is between the second restraint layer 12 and the third layer 14 (re claim 7); wherein the first constraint layer has a width that is substantially the width of the transducer and substrate (see FIG. 1) (re claims 8-9); substrate has a CTE between 7-8.3, i.e., 7.9 (re claim 10); the transducer comprises metals with thermal expansion rates in the range of 12 to 17 (NiFe-12.2) (re claim 11).

Art Unit: 2652

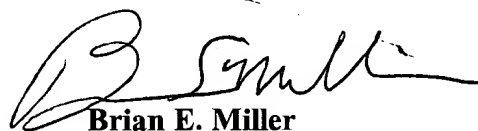
With respect to claims 13-17, the above structure is considered to encompass the method steps as claimed. Claim 18 is considered to also be encompassed by the above structure since the first restraint layer 17 is a thin film and deposited on another thin film, i.e., 13 (NiFe).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (703) 308-2850. The examiner can normally be reached on M-F 7:45am-5:15pm (FF off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.



Brian E. Miller
Primary Examiner
Art Unit 2652

bem
April 2, 2003